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CASE REPORT / OLGU SUNUMU

Peripheral Ossifying Fibroma: Series of Three Cases

Periferal Ossifiye Fibroma: Üç Olgu Sunumu

Suay Yağmur ÜNAL, Hakan YÜLEK, Gaye KESER, Filiz NAMDAR PEKİNER, Selma YALTKAYA

Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey.

Corresponding Author
Suay Yağmur Ünal (✉)
suayyagmurunal@gmail.com

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ÖZ

Periferal ossifiye fibroma (POF), ağırlıklı olarak kadınları etkileyen ve genellikle interdental papillada görülen reaktif bir yumuşak doku büyümesidir. Rengi soluk pembeden koyu kırmızısına kadar değişir ve pürüzsüz bir yüzeye veya saplı geniş bir tabana sahip olabilir. Bu çalışmanın amacı üç farklı POF vakasını histopatolojik ve radyolojik incelemelerle değerlendirmek ve karşılaştırmaktır. Farklı yaşlarda iki kadın ve bir erkek hasta kliniğimize interdental papilla alanının anterior bölgesinde asemptomatik, yumuşak doku büyümeleri şikayeti ile geldi. Lezyonlar cerrahi olarak eksize edildi ve POF tanısını doğrulayan histopatolojik incelemeye gönderildi. POF'un etiyolojisi net olmamakla birlikte, plak, diş taşı, iyi oturmayan protezler ve uyumsuz diş restorasyonları gibi travma veya lokal irritasyonun POF gelişimini hızlandırdığı bilinmektedir. Diş hekimleri pyojenik granülom, fibroma ve periferal odontojenik fibroma gibi klinik ayırıcı tanıları göz önünde bulundurmalıdır.

Anahtar Kelimeler: Ayırıcı tanı, periferal ossifiye fibroma, oral diagnoz, histopatolojik değerlendirme

ABSTRACT

Peripheral ossifying fibroma (POF) is a reactive soft tissue growth that predominantly affects females and usually seen on the interdental papilla. Its color ranges from pale pink to cherry red, and it might have a smooth surface or a broad base with pedunculation. This study's purpose is to evaluate and compare three different POF cases with histopathological and radiological examination. Two female and one male patients of different ages came to our clinic with a complaint of asymptomatic, soft tissue growths in the anterior region of the interdental papillae area. The lesions were surgically excised and sent for histopathological examination which confirmed the diagnosis of POF. Even though the etiology of the POF is unclear, trauma or local irritation such as plaque, calculus, ill-fitting dental appliances, and poor-quality dental restorations are all known to precipitate the development of POF. Dentists should consider clinical differential diagnoses such as pyogenic granuloma, fibroma, and peripheral odontogenic fibroma.

Keywords: Differential diagnosis, peripheral ossifying fibroma, oral diagnosis, histopathologic evaluation

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INTRODUCTION

Because of its proximity to various tissues, including the bone and the periodontal ligament, as well as its relationship to various microbiological environments, the gingiva is oral cavity's most frequently occurring site for reactive lesions (Sihavong et al., 2024). Difficulty over the clinical diagnosis arises from a number of lesions with very similar clinical characteristics (García, et al., 2010). These lesions include peripheral ossifying fibroma (POF), irritation fibroma, pyogenic granuloma, peripheral giant cell granuloma and inflammatory gingival hyperplasia and to reach the certain conlusion histopathological examination needs to be done (García, et al., 2010; Hunasgi et al., 2017).

POF can appear as a pedunculated growth or have a broad base of attachment. These growths range in color from red to pink and may show areas of ulceration. Lesion's surface can be either smooth or irregular. Typically, they are smaller than 2 cm in diameter, though they can vary significantly in size, with reports indicating dimensions from 0.2 cm to 8 cm (Agarwal et al., 2019).

While uncommon, there have been instances of tooth migration and bone destruction associated with POF. The prevalence in females compared to males varies in reported studies, with ratios ranging from 1.22:1 and 1.7:1 to as high as 4.3:1. Most cases are found in individuals in their second decade of life, with a decreasing frequency in older age groups. The lesion can persist for months to years before being excised, influenced by the degree of ulceration, discomfort, or functional interference. Around 60% of POF cases occur in the maxilla, predominantly in the anterior region, with 55%-60% of these presenting in the incisor-cuspid area (Kumar et al., 2006; Phore et al., 2016).

POF exhibits a distinct histopathological profile. Typically, the surface epithelium of POF is ulcerated in many instances, revealing a connective tissue stroma beneath. This stroma is predominantly cellular with a significant fibroblastic component, especially noticeable in ulcerated lesions. Conversely, nonulcerated POFs tend to display more collagenized connective tissue. A hallmark of POF is the presence of mineralized material within the lesion. This can include woven bone, lamellar bone, and cementum-like calcifications (Buchner & Hansen, 1987; Neville et al., 2002).

Dystrophic calcifications are also a common feature, particularly in areas of the lesion that have experienced ulceration. Chronic inflammatory cells, such as lymphocytes and plasma cells, infiltrate the tissue, contributing to the inflammatory response observed in these lesions. Over time, the mineralized components may act as nidi, promoting osteoblastic activity and leading to the formation of new osteoid and bone. Additionally, the presence of multinucleated giant cells is sometimes noted, further contributing to the complex histological landscape of POF. This intricate interplay of cellular and mineralized elements underlines the dynamic nature of the lesion and its potential for growth and calcificationThese calcifications can be observed as scattered calcifications on panoramic or periapical radiographs (Buchner et al., 1987; Cavalcante et al., 2022).

In this case series, three distinct POF cases are examined, each differing in age, gender, and clinical presentation.

CASES

Case I:

A 55-year-old female patient with a significant medical history of hypertension and diabetes mellitus presented to our clinic for evaluation of an oral lesion. She reported a smoking habit of approximately five cigarettes per day. The patient had noticed the lesion several months prior but had not experienced any pain or discomfort. During the intraoral examination, a painless, solitary mass was identified in the mandibular gingiva, specifically in the area between tooth numbers 32 and 33. The lesion measured approximately 1 x 1.5 cm in diameter (Fig. 1). It exhibited a pinkish color and had a smooth surface texture.

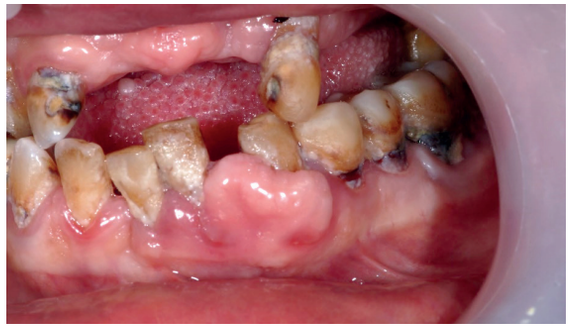

Figure 1: Smooth textured gingival mass between tooth numbers 32 and 33.

Further investigation with periapical radiography revealed the presence of calcifications within the lesion, which is a characteristic finding for peripheral ossifying fibroma (Fig. 2). Given the clinical and radiographic findings, an excisional biopsy was performed under local anesthesia to completely remove the lesion (Fig. 3). The excised specimen was sent for histopathological analysis.

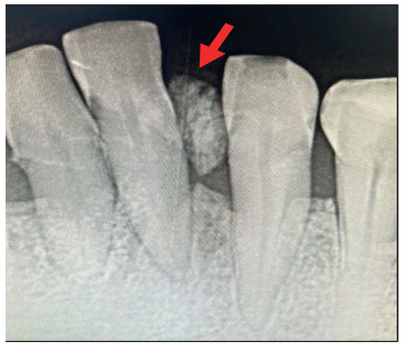

Figure 2: Periapical radiography revelaed the presence of calcifications.

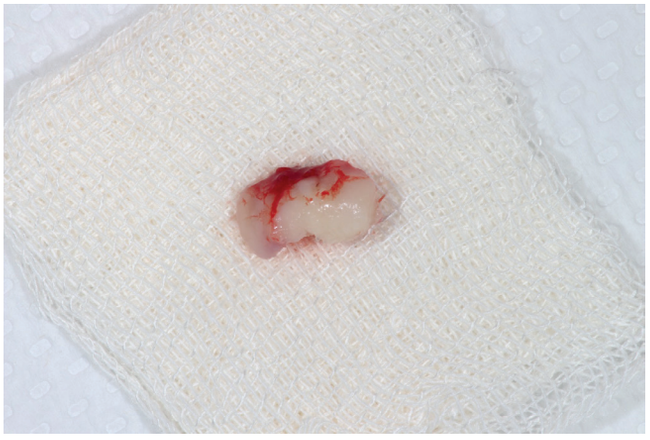

Figure 3: Excisional biopsy specimen

Histopathological examination of the biopsy confirmed the diagnosis of peripheral ossifying fibroma, demonstrating the typical features of this lesion, including a fibroblastic stroma with areas of calcification and ossification. The patient was instructed on post-operative care and scheduled for a follow-up visit to monitor healing and ensure there were no complications.

One week post-surgery, the patient returned for a follow-up appointment. Clinical examination at this time revealed that the surgical site was healing well, with no signs of infection or recurrence (Fig. 4). The patient reported no pain or discomfort and expressed satisfaction with the treatment outcome. Further follow-up visits and periodontal treatment were planned to ensure long-term monitoring and management.

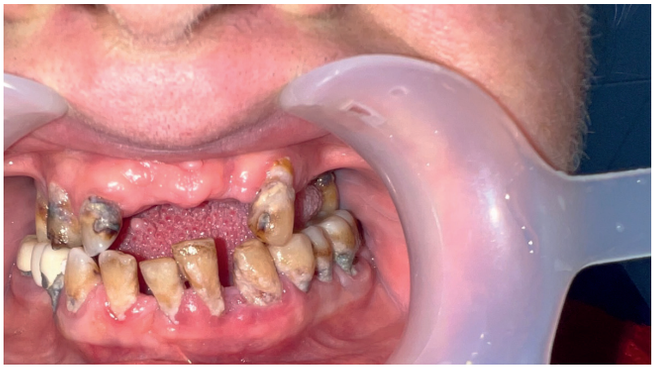

Figure 4: One week following the patient's biopsy, the surgically removed region had healed properly, with no evidence of infection or recurrence.

Case II:

A 53-year-old male patient presented to our clinic with a complaint of a painless mass located in the mandibular gingiva, specifically in the area between tooth numbers 32 and 33. The patient reported smoking a pack of cigarettes per day, which is a significant factor in his medical history. He had noticed the lesion several months ago but sought evaluation only recently due to its persistent presence.

Upon intraoral examination, a solitary, smooth-surfaced, pink-colored hypertrophic lesion was observed in the specified area (Fig. 5). The lesion measured approximately 1.5 x 1.2 cm and was non-tender upon palpation. Given the clinical presentation, an excisional biopsy was deemed necessary to remove the lesion and obtain a definitive diagnosis.

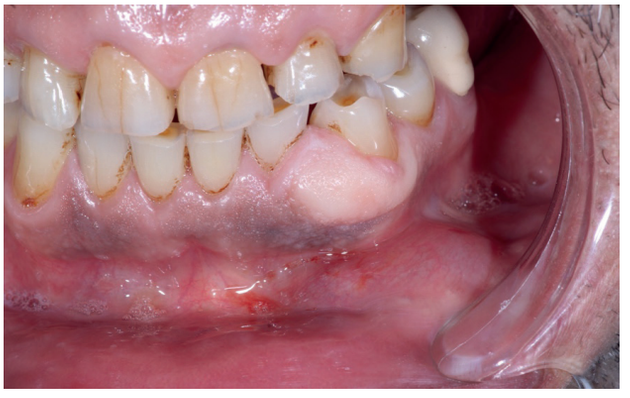

Figure 5: A solitary, smooth-surfaced, pink-colored hypertrophic lesion was observed between 32 and 33.

The excisional biopsy was performed under local anesthesia, ensuring complete removal of the lesion along with a margin of healthy tissue to minimize the risk of recurrence (Fig. 6). The excised specimen was subsequently sent for histopathological examination.

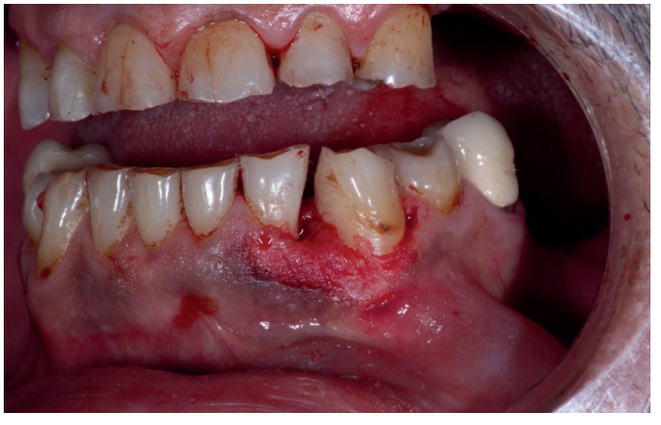

Figure 6: Intraoral appearance of the area after the excisional biopsy.

Histopathological analysis confirmed the diagnosis of peripheral ossifying fibroma, characterized by a fibroblastic stroma with areas of mineralization, including bone and cementum-like material. The cellular composition and the presence of calcifications were consistent with typical features of this type of lesion.

The patient was provided with detailed post-operative care instructions and was scheduled for a follow-up visit to assess the healing process. However, the patient was unable to attend the follow-up visit as he was out of town. Despite his absence, we received the histopathology

report confirming the diagnosis of peripheral ossifying fibroma.

Further follow-up visits will be arranged once the patient returns, to ensure continued monitoring and to check for any signs of recurrence. The patient was also advised on smoking cessation to improve overall oral health and reduce the risk of future oral pathologies.

Case III:

A 15-year-old female patient with no history of systemic disease or cigarette use presented to our clinic with the chief complaint of a mass located between tooth numbers 21 and 22. The patient had noticed the mass several weeks prior but reported no pain or discomfort associated with it.

Intraoral examination revealed a solitary mass situated in the palatal interdental papilla and the attached gingiva between teeth 21 and 22 (Fig. 7). The lesion was approximately 1 x 1 cm in size and exhibited a pinkish color with a smooth surface. However, the side of the lesion facing the occlusal surface was focally ulcerated, likely due to trauma from occlusal forces.

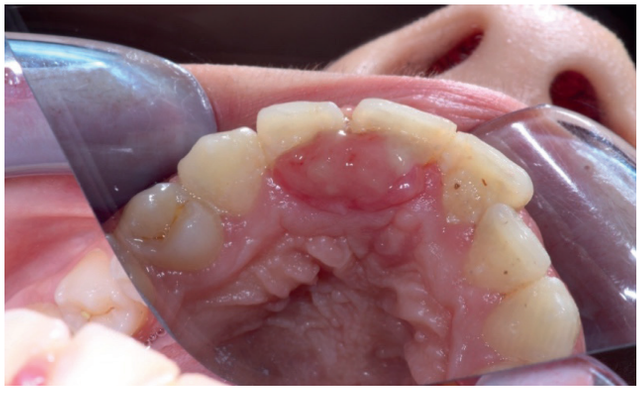

Figure 7: Palatally, a partially ulcerated mass can be seen between teeth 21 and 22.

Given the clinical presentation, an excisional biopsy was performed under local anesthesia to completely remove the lesion and to facilitate a definitive diagnosis. The excised tissue was sent for histopathological examination. Histopathological analysis confirmed the diagnosis of peripheral ossifying fibroma, showing typical features such as a fibroblastic stroma with areas of calcification and ossification. The presence of these mineralized components, along with the cellular characteristics, was consistent with the diagnosis.

The patient was provided with detailed post-operative care instructions and scheduled for a follow-up visit one week later to assess the healing process (Fig. 8). During the follow-up visit, the surgical site was examined and found to be healing well, with no signs of infection or complications. The patient reported no pain or discomfort and was satisfied with the treatment outcome.

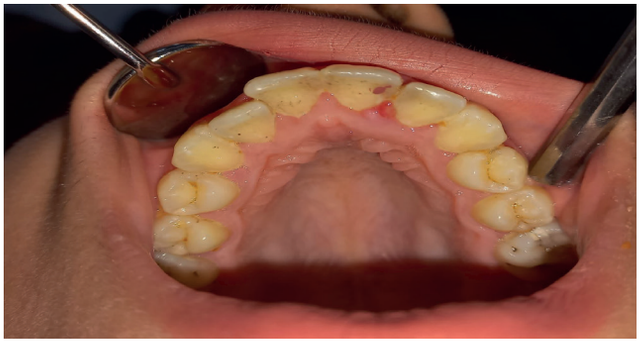

Figure 8: Intraoral image after excisional biopsy

Further follow-up visits were planned to ensure long-term monitoring and to check for any signs of recurrence. The patient and her guardians were also advised on maintaining good oral hygiene to support healing and prevent future issues.

DISCUSSION

POF is a benign tumor predominantly affecting the alveolar mucosa and gingiva. If left untreated, it can grow to a size that causes significant discomfort to the patient and may adversely impact oral hygiene. Although the exact etiology of POF remains unclear, it is generally believed to arise from the periodontal ligament or gingival connective tissue in response to chronic irritation or trauma. Contributing factors include poor oral hygiene, ill-fitting dental appliances, and hormonal changes. Additionally, local irritants such as dental plaque, calculus, and foreign objects embedded in the gingiva have been implicated in its pathogenesis (Mergoni et al., 2015; Franco-Barrera et al., 2016).

In a study by Cuisia et al. examining 134 POF lesions in patients aged 0-19 years, the average female-to-male ratio was found to be 1:1.5. The most common site was the maxillary anterior region, accounting for 37% of cases, with lesion sizes ranging from 0.3 to 3 cm (Cuisia & Brannon, 2001).

Buchner et al. investigated 341 POF lesions in patients aged 15-63 years and reported an average female-to-male ratio of 1:1.5. Similarly, the maxillary anterior region was the most frequently affected area (34%), with the most common age range being 20-39 years (Buchner et al., 2010).

Cavalcante et al., in their study of 270 POF lesions in patients aged 0-87 years, observed an average female-to-male ratio of 1:2.6. They identified the most common age range as 20-39 years and lesion sizes ranging from 0.2 to 7 cm (Calvante et al., 2022).

Clinically, POF can present similarly to other oral lesions, making differential diagnosis a challenge. Conditions that may resemble POF include pyogenic granuloma, peripheral giant cell granuloma, fibroma, and peripheral odontogenic fibroma. Histopathologically, POF is characterized by stratified squamous epithelium overlying a dense mass of

connective tissue. This tissue consists of plump fibrocytes, fibrillar stroma, and plump fibroblasts, with areas of mineralization and occasionally multinucleated giant cells. The mineralization may include bone, cementum-like material, or dystrophic calcifications. Early ulcerated lesions typically show dystrophic calcifications, whereas older, mature, non-ulcerated lesions exhibit well-formed bone and cementum-like material (Lazare et al., 2019; Shrestha et al., 2021). Our cases were compatible with the findings in the literature because of the age and macroscopic appearance.

The differential diagnosis of POF from other gingival proliferative lesions can be particularly challenging due to overlapping clinical and histological features. Peripheral Giant Cell Granuloma (PGCG), for instance, is another reactive lesion originating in the periodontal ligament or periosteum. PGCG is typically seen in females in the fourth to sixth decades of life, presenting as a soft nodular mass with histological features that include mesenchymal cell proliferation and multinucleated giant cells with prominent vascular growth. However, the presence of bone components in approximately one-third of PGCG cases necessitates careful differentiation from POF (Shrestha et al., 2021; Takagi et al., 2024).

Chaitra et al. first considered pyogenic granuloma for the lesion in the mandibular premolar region of a 16-year-old male patient, but histopathological evaluation showed that the lesion was a peripheral ossifying fibroma. This case resembles our third case, where the differential diagnosis included lesions typically induced by trauma (Chaitra et al., 2022). Moreover, Katanec et al. reported that the lesion in the mandibular posterior region of a 70-year-old male patient who had recently undergone implant treatment was primarily considered an irritation fibroma, but histopathological evaluation showed that the lesion was a peripheral ossifying fibroma. This highlights the diagnostic overlap with other fibromatous lesions, a challenge also encountered in our first and second cases (Katanec et al., 2022).

Shah & Sharma reported that a 14-year-old patient presented with an asymptomatic swelling in the mandibular lingual region. The preliminary diagnosis of the lesion, which was thought to be traumatic fibroma or peripheral osteoma, was observed to be POF as a result of histopathological evaluation. This case mirrors the clinical ambiguity seen in our younger patient (Shah & Sharma, 2018). In addition, Parihar et al. reported that a 16-year-old patient presented with an ulcerated swelling in the anterior palatal region of the maxilla. The preliminary diagnosis of the lesion was thought to be pyogenic granuloma traumatized by occlusal forces. As a result of histopathological evaluation, it was observed that the lesion was POF. The clinical presentation of an ulcerated mass due to occlusal trauma closely parallels our third case (Parihar et al., 2015).

The standard treatment for POF involves conservative local resection. Complete excision, including the adjacent periodontal ligament or periosteum where the POF originates, is crucial to eliminate the risk of recurrence. In cases where malignancy is suspected, as illustrated by the unusual features in some reported POF cases, a thorough histological examination is essential for accurate diagnosis and appropriate treatment planning (Topcuoglu et al., 2023; Parsegian et al., 2024).

Kale et al. examined 5 different ossifying fibromas and found that calcification was present in the periapical radiographs of three cases and no calcification was observed in two cases. In our study, calcification was observed in one case and no calcification was observed in the radiographs of the other two cases (Kale et al., 2014).

Bashkar et al. analyzed 376 cases of POF and found that 185 cases contained calcifications, 97 of which showed mature and immature bone formation and 86 of which showed calcified foci. It should be taken into consideration that these calcifications must reach a certain size in order to be observed on periapical and panoramic radiographs (Bhashkar et al., 1966).

To effectively manage reactive gingival lesions, it is essential to eliminate or correct injurious agents, maintain effective plaque control, ensure good patient motivation, and perform precise surgical excision. Various treatment options have been used for surgical excision of overgrowth for many years, including conventional scalpel techniques, electrosurgery, and cryosurgery. The introduction of laser technology represents an innovative approach to the surgical management of overgrowth (Gulati et al., 2019). In all of our cases, periodontal treatment with total excision was performed and patients were encouraged for regular check-ups for recurrence.

CONCLUSION

In conclusion, this study highlights the variability in clinical presentation, age, and gender distribution of peripheral ossifying fibroma, underscoring the importance of thorough histopathological evaluation for accurate diagnosis and effective management.

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Research idea: FNP
Design of the study: SYU, GK, FNP
Acquisition of data for the study: HY, SY, GK
Analysis of data for the study: SYU, HY, SY
Interpretation of data for the study: SYU
Drafting the manuscript: SYU, FNP
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